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WEEKLY STATION REPORTS

OF THE DIVISION OF

DRY LAND AGRICULTURE

BUREAU OF PLANT INDUSTRY

U. S. DEPARTMENT OF AGRICULTURE

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REPORT FOR THE MONTH OF DECEMBER, 1937

HAVRE:

In spite of considerable cloudiness, December was very deficient in precipitation, only 0.14 inch occurring. Light snows on 13 days totalling 2.2 inches provided but little protection for winter grains, the ground being completely bare most of the month. The mean temperature of 18° was about 2° below normal. An absolute maximum of 47° occurred on the 15th and a minimum of -21° on the 9th. Twelve days had minima of zero or lower and on 14 days the temperature reached 32° or above. There were two cold periods, one from the 6th to the 14th and a second from the 23rd to the 28th, otherwise mild weather prevailed. Wind movement was relatively light the first part of the month, increasing later, with two gales, each causing a thick dust haze, during the last week.

Station activities were confined to winter feeding of cattle in experimental lots, reconditioning machinery, and writing annual progress reports. An additional 10-acre tract of potential subirrigated alfalfa land was cleared of brush and stumps by the WPA crew, the total amount of new land of this character now available for cultivation approximating 22 acres. Work is continuing on another area.

Maximum temperature, 47°; minimum, -21°; precipitation, 0.14 inch; snowfall, 2.2 inches.

JUDITH BASIN:

December was characterized by extremes in temperatures. A severe cold wave over the Northwest brought -22°, -23°, and -18° on the 8th, 9th, and 10th of the month. This was followed by much warmer weather and a storm in the form of rain, sleet, and snow with 0.71 inch precipitation. This storm was followed by a chinook which enabled most of the moisture to go into the soil. Conditions seem more favorable, as with the present moisture there should be less soil blowing during the winter than in the past few years.

A severe wind storm of high velocity began the evening of the 25th and continued until sometime during the evening of the 26th. Many large snow drifts were formed around the buildings and shelterbelt plantings. Considerable shoveling was necessary to get cars through to the highway. Fortunately the temperatures were moderate during this heavy blow, or difficulty would have been encountered in keeping the water system from freezing.

Maximum temperature, 48°; minimum, -23°; precipitation, 1.16 inches.

HUNTLEY:

Weather conditions during the month were, with the exception of precipitation, close to normal. Wind velocities, average, maximum and minimum temperatures were very slightly above normal, but precipitation was only 50% of the 28-year average, making the month one of the driest Decembers in the history of

the station. Total precipitation for 1937 was 9.52 inches, which was the third lowest in the station record. Notwithstanding the comparatively low precipitation, snow covered the ground during a large part of the month and provided protection for winter wheat and rye throughout most of the period. Very little drifting took place.

Winter feeding of cattle and lambs on neighboring farms has been greatly benefited by the moderate climatic conditions. Gains have been good and death losses light. Yards have been dry and free from drifted snow. Feed supplies are reported as ample.

Maximum temperatures were above freezing on 23 days during the month, and minimum temperatures were below zero on 6 days of the month. The coldest periods were from the 8th to the 10th with minimum temperatures of -8°, and from the 24th to the 26th with temperatures of -20° and -15°.

Maximum temperature, 49°; minimum, -20°; precipitation, 0.38 inch.

SHERIDAN:

Temperatures for December were just about average for the station. No very extreme temperatures, either high or low, occurred. There were two short periods of fairly cold weather, one from the 8th to the 10th with 3 days of below zero temperatures, and one on the 24th and 25th with below zero readings. The remainder of the month was fairly mild.

Snow on the ground the last of November remained throughout the month. There was one period of heavy precipitation for this season, from the 13th to the 16th, with traces or light amounts of snow on 9 other days of the month. An unusual feature of the precipitation was around a third of an inch of rain preceding the snow on the 12th, and 0.22 inch of rain again on the 16th. This resulted in a heavy coat of ice on highways and on some land, but apparently not on recently cultivated ground. Total precipitation for the month was between 2 and 3 times the average. Wind movement for the month was slightly above the station average. Thawing during the last few days of the month reduced the snow covering to about 3 inches.

Maximum temperature, 50° on the 30th; minimum, -16°, 8th and 24th, precipitation, 1.20 inches.

MANDAN:

Data collected from farm shelter belts during the season of 1937 show that the drought of the past few years has by no means killed all the trees planted previous to the drought period. The data do show, however, that attempts to establish new plantings during drought periods are likely to meet with very little success.

A comparison of the average height and survival data of four species which were planted each year during the years 1925-33, inclusive, shows at the end of the first five-year period for each of the respective plantings a reduction in both average height and survival for the 1933 belts which entered the drought period almost immediately after being planted. The data are as follows:

Year	Northwest poplar ave.ht. feet	Northwest poplar survival percent	Boxelder ave.ht. feet	Boxelder survival percent	Green ash ave.ht. feet	Green ash survival percent	Caragana ave.ht. feet	Caragana survival percent
1925	11.9	93.8	9.3	92.0	6.7	93.5	5.0	92.8
1926	9.2	83.6	7.6	86.0	5.1	88.0	4.7	92.6
1927	10.4	84.6	6.7	86.2	5.3	94.2	4.0	93.4
1928	10.5	76.8	8.1	89.6	5.4	93.5	4.6	94.6
1929	9.0	85.0	7.4	93.0	6.9	88.7	3.8	82.4
1930	8.9	66.0	6.6	85.3	4.9	90.5	3.8	80.0
1931	8.8	70.3	6.7	75.5	5.3	83.9	3.2	69.5
1932	9.4	59.0	7.7	75.2	4.9	72.5	3.4	73.2
1933	8.6	47.5	5.9	73.7	4.3	65.2	2.9	63.1

Recent reports received from cooperators indicate that survivals are much lower in 1934 belts than those shown for 1933, and that 1935 and 1936 belts are almost complete failures.

A comparison of the number of 20, 15, 10, and 5-year belts which have become complete losses during the 1933-37 period, shows the following:

Age	Montana	North Dakota	South Dakota	Wyoming
		Percent losses		
20-year belts	8	0	13	0
15-year belts	3	2	14	0
10-year belts	5	1	15	6
5-year belts	17	15	46	16

The heavier losses in South Dakota can be attributed to more widespread grasshopper defoliation and "barking" of branches and trunks over a period of years in addition to the severe drought conditions.

The 1937 average height and survival data for the various species used in 20, 15, 10, and 5-year belts are as follows:

Species	Years of age. 20 Height feet	20 Survival percent	15 Ht.ft.	15 Survival percent	10 Ht.ft.	10 Survival Percent
Willow	10.1	8.4	-	-	-	-
Boxelder	12.0	48.0	11.7	59.6	8.0	58.7
Green ash	11.1	59.0	12.7	69.9	8.2	70.8
N. W. Poplar	-	-	11.1	4.5	15.0	14.6
Siber. Pea-tree	-	-	8.3	79.0	6.0	79.7
Russian olive	-	-	9.1	50.4	7.7	61.8
Chokecherry	-	-	7.5	58.2	-	-
Chinese elm	-	-	11.8	22.7	11.4	57.9

Height and survival data, cont'd.- Years of age.

Species	5 Height feet	5 Survival percent
Willow	-	-
Boxelder	5.9	73.7
Green ash	4.3	65.2
N.W.Poplar	8.6	47.5
Siber. Pea-tree	2.9	63.1
Russian olive	5.0	68.4
Chokecherry	3.8	64.2
Chinese elm	6.7	59.2

The data collected during the summer also show that a smaller percentage of farmers who have planted trees on their farms have abandoned their farms than the figures on abandonment generally credited to the northern Great Plains. Of the men on the farms at the time the trees were planted, it was found that 70.3 percent are still on the farms, 14.8 percent have rented or sold their farms, and 14.9 percent have abandoned their farms entirely.

Weather during the month of December was mild. There were few cold days and no severe snow storms. The total snowfall was 4.70 inches, and the precipitation, 0.63 inch.

The total precipitation for 1937 was 16.09 inches compared with the 20-year (1914-33) average of 15.79 inches and the 60-year (1875-34) average of 16.62 inches.

Maximum temperature, 44°; minimum, -19°; precipitation, 0.63 inch.

DICKINSON:

Moderate weather prevailed during most of December, but cold spells the second and fourth weeks when the minimum dropped to -26° and -27° brought the mean temperature down near normal. Snowfall for the month was 2.9 inches, and precipitation was only a normal amount of 0.42 inch. On the 12th a rain of 0.15 inch froze as it fell. Only about an inch of snow remained on the ground at the end of the month. Total precipitation for the year was 16.28 inches. Snowfall amounted to 30.6 inches or 2 inches above average.

Maximum temperature, 45°; minimum, -27°; precipitation, 0.42 inch.

BELLE FOURCHE:

December was generally mild, but a cold wave occurred December 6 to 10, during which daily minimum temperatures ranged from 0° to -15°. Subzero temperatures were also recorded on December 14 and December 24 to 25. The mean temperature for the month was approximately 1.5° above normal, and the average daily minimum temperature was 4° above normal. The precipitation for December was 0.04 inch greater than the average for the month; and the total for the year was 18.59 inches, which is 2.79 inches greater than the average annual precipitation.

A light snow of 0.13 inch precipitation on December 5 and 0.34 inch precipitation, received as snow and sleet on December 12, were of material benefit to fall grain. Warm weather following each storm settled the snow so there was no drifting, but some snow cover remained on the ground throughout most of the month, offering excellent protection from the frequent high winds.

Maximum temperature, 51°; minimum, -15°; precipitation, 0.48 inch.

ARCHER:

The weather during December was marked by heavy precipitation, few heavy winds, and moderate winter temperatures. The total precipitation during the month was 0.89 inch, which is the largest amount of precipitation to occur during December since 1919. This in connection with the rather unusual amount of precipitation during November, 0.57 inch--the largest amount since 1922--has improved crop prospects generally for 1938. The total precipitation for 1937 was 13.17 inches, which is 0.74 inch less than the 24-year average. The hail storms of July 15 and 18, which cut all crops to the ground, and the dry spell during August and September were the big weather events of the year.

The early fall was unfavorable for winter cereals, but November and December were favorable. The major amounts of precipitation occurring during these months were timely and sufficient to be of real benefit. Rain fell during most of the day of December 12. This was followed by 10 inches of snow which, due to light winds, drifted but little. Thus the ground was covered with snow until December 29, when a thaw caused bare spots to appear. The plants of the winter cereal crops are small but in a vigorous condition with sufficient moisture for the present.

Notwithstanding the fact that the ranges have been covered with snow, which made heavy feeding necessary, livestock conditions generally are satisfactory.

Director W. L. Quayle visited the station December 21. John A. Allis of the Soil Conservation Service visited the station December 15-19.

Maximum temperature, 60°; minimum, -12°; precipitation, 0.89 inch.

AKRON:

From about the 6th on there was snow cover in December. Considerable more snow fell evenly on the 14th, and wind velocities were not thereafter of sufficient velocity to drift it. This now has gradually settled until today, January 1, an occasional bare spot can be found on native sod fields. Needless to say the temperatures have been low, but with the exception of a period from the 8th to the 10th minimum readings were not below zero. General expression heard is that December has been ideal winter weather. This was the first "white" Christmas for several winters past, which has helped to create a feeling of optimism toward the coming year.

Hog Feeders' Day was held last Friday the 31st, which was quiet with agreeable outdoor temperature by 10 o'clock. About 175 people gathered at the station to view the lots, and to hear Mr. H. B. Orland explain the feeds and the gains. The afternoon program was in Aaron, at which Professor George E. Morton, W. W. Sweargen, and Dr. Stout gave interesting addresses on livestock subjects. There was a general expression of satisfaction, with a request for more such events.

The year closed with 11.35 inches of precipitation. This was just 0.61 inch more than the lowest yearly precipitation, recorded in 1931, and was the second lowest in the 30-year period.

Current field and office work occupied the diminished station force. Temperatures: Maximum, 59°; minimum, -8°; precipitation, 0.63 inch.

COLBY:

December was a dry and pleasant month. There was considerable cloudy, misty, rainy, and snowy weather during the first half, but there were no storms and no extremes in temperature. The temperature was about normal. The wind velocity was slightly below normal, with no extremely high winds. There were no dusty days and only one dust storm. The dust storm came up suddenly from the north shortly after midnight on the morning of the 31st and lasted about an hour.

Winter wheat killed down in November and remained practically dormant during December. The ground was frozen, except on a few of the warmest afternoons. The roots of the winter wheat are generally in moist soil, but the supply of available moisture is not sufficient to carry it very long after growth starts. Maximum temperature, 63°; minimum, -3°; precipitation, 0.26 inch; snow, 2.6 inches. Precipitation, 1937, 13.88 inches; 50-year average, 17.43 inches. This is the seventh successive year of subnormal precipitation.

HAYS:

The weather was generally mild, quiet, and clear, the record showing 16 clear days, 9 partly cloudy days, and 6 cloudy days. The temperature ranged between 65° and 0°, the mean temperature for the month being 31.3°. No heavy winds or storms occurred.

Winter wheat generally is in fair condition. There was little growth during the month, but looking down the drill-rows, the wheat is green. On fallowed plots the wheat has made good growth and is plenty thick but not too heavy. On early tilled plots the tillering and growth is noticeably less than on fallowed plots, but the wheat is in fair condition. On late tilled plots there has been very much less tillering, the growth is thinner and much less vigorous.

Although the wheat is still in fair condition, the surface soil is dry to the depth of 6 inches and should heavy freezing weather prevail before more precipitation occurs, there is danger of some loss by winter killing. In general, with a lack of subsoil moisture, and with little moisture in the surface soil at

this time, it seems to the writer, there is little encouragement for expecting a profitable wheat crop next harvest. Even on fallow, the condition is less favorable than it was at this time last year. Certainly the crop is very largely dependent on precipitation that may occur between this time and harvest.

The precipitation for the month was 0.18 inch or 0.55 inch below normal. The total precipitation for the year was 17.86, which is 4.83 inches below a 70-year normal. 1937 is the fifth consecutive year having a below normal precipitation, during which the accumulated deficiency is 26.50 inches. This shortage of water, which amounts to more than one year of normal precipitation, is at least one good reason for failures and low yields of annual crops and for the extremely heavy loss of trees.

Although on still water there is at this writing about 4 inches of ice, there seems to be little frost in the soil, which may be explained by the fact that the surface soil is dry. The total precipitation during the past 72 days was only 0.58 inch.

GARDEN CITY:

A few light flurries of snow during the first half of December yielded 0.12 inch of moisture; the normal for the month is 0.48 inch. 1937 is second to 1934 for being the driest year on record (1908-1937). The total for 1934 was 7.08 and that for 1937 was 8.04 inches. The normal (1908-1936) is 17.69 inches. The past four years have all been far below normal, the average of the four years being 9.39 inches.

The wheat has not emerged as yet, and the prospects for a crop are slim. Field work consisted of threshing sorghums and taking soil samples on M.C. Wheat plots A, B, C, and D. Maximum temperature, 63°; minimum, 3°; precipitation, 0.12 inch.

TUCUMCARI:

Although the mean temperature was but slightly above the 32-year average mean, there was no extremely cold weather. On only three days did the thermometer fall below 20°. The minimum for the month was 15°; the maximum, 70°

Precipitation of 0.59 inch equalled the long-time December average. On December 13 rain, sleet, and snow occurred. The 0.56 inch precipitation of this date entered the ground slowly and was of great benefit, especially to wheat on the plains south of Tucumcari, where the crop was in a critical condition.

Wind movement was about normal, with only two or three days when the velocity was sufficiently high to move dust particles. All station fields have been roughed as protection against future wind movement.

Weather the past two months has been unusually pleasant, ranges are in fair condition, and livestock are in fair shape.

DALHART:

The first few days of the month and the last week of the month were mild. This open weather permitted the finishing of outside field work with the exception of strip cultivation, which will not be a completed job until planting time. The month furnished one wet snow on the 13th. This lay on the level as it fell, but considerable drifting occurred the following day. Except for small drifts, this snow was melted by the 20th. There still remains a few patches of snow where the sun does not shine upon it.

The surrounding land has more vegetative cover than it did a year ago, but the surface soil is so powdery that blowing of soil is apt to be bad with every strong wind, unless moisture is received to permit tillage, or unless perchance a deep snow should be received.

December temperatures had a narrower range than usual. The mean maximum temperature of 46° was 2° below the average, and the mean minimum temperature of 22° was 4° higher than the average. Wind movement was moderate, with only 7 or 8 days with noticeably strong winds. The monthly precipitation was 0.32 inch.

While 1937 gave the greatest precipitation of any year since 1932, it was still well below normal. Some yearly precipitation data and a group of average follow:

Period or Year	Inches Precipitation	Averages
1937	14.48	
1936	9.93	
1935	13.31	
1934	9.78	
1933	10.14	11.53 inches for past 5 yrs.
1932	19.45	
1931	14.30	13.06 inches for past 7 yrs.
1923 to 1930		21.75 inches (8-year ave.)
1908 to 1937		17.62 inches (30-year ave.)

May was the only month during the year with rainfall greater than the normal for the month. Total wind movement for the year was slightly below average. The yearly temperatures were nearly normal with no unusual extremes.

It is obvious from the above rainfall data that either an unusually wet year or a group of wet years is needed to restore subsoil moisture and to give the surface soil sufficient root growth and tilth to again be held in place.

BIG SPRING:

Weather conditions during the month of December were not very favorable for field work as a whole. Although the minimum temperature was high, misty, cloudy weather prevailed for a number of days. The minimum for the month was only 24°, and the greater part of the time it was above freezing.

Measurable amounts of precipitation were received on 6 days, and there were a number of others when only traces were shown. The total for the month was 1.56 inches as compared with a normal of 0.68 inch. The total precipitation for the year was 14.84 inches, or 4.26 inches less than the normal of 19.10. The seasonal was only 8.31 inches as compared with

a normal of 13.06 inches in spite of the fact that the annual precipitation was more than 22 percent less than normal, this county produced the largest cotton crop in its history. This can be partially explained at least by the unusually large supply of subsoil moisture carried over from the previous fall.

Station work during the month consisted of picking cotton, plowing and listing plots, and hauling feed. Ginning cotton, and threshing hand selected seed took care of the inside jobs.

Mr. Black of the Bureau of Animal Industry and J. H. Jones and George Barnes of the Texas Station were visitors during the month.

Maximum temperature, 81°; minimum, 24°; precipitation, 1.56 inches.

LAWTON:

Clear, sunshiny days were decidedly scarce throughout the month of December, as cloudy, misty, foggy periods prevailed with moderate temperatures. Precipitation recorded on 9 dates amounted to 1.11 inches. Of this amount 0.72 inch was recorded December 14 to 16 with much benefit to small grains.

The total yearly precipitation of 26.40 inches was 4.45 inches below the long time average. March, August, and September were the only months when precipitation was normal or above. Thirty-five percent of the yearly total was received from August 20 to September 7.

The general sentiment among farmers is that small grains have but little reserve moisture to support early spring growth. Winter grazing has been light, and most fields have been and continue to be grazed very close to the surface.

Station plots of wheat were not seeded early enough to make excessive growth, and the plants appear to be in good, vigorous winter condition. Winter seedings of oats and barley are very thrifty and, to date, are entirely free from any winter injury.

Fall seedings of alfalfa and sweetclover on the rotation plots did not make sufficient growth to withstand freezing temperatures, and reseeding in the spring will be necessary. Several acres of alfalfa seeded on an increase field will undoubtedly survive the winter in good condition.

The 1937 cotton crop was ginned and baled before Christmas. The staple was short to medium length, the fiber weak, the lint percentage low, and the yield almost negligible, about the same as in the drought years of 1934 and 1936. The late top crop of bolls, set on after the August and early September rains, did not mature. A few tag ends and remnants of snapped cotton, very inferior in quality, are still coming to the gins. The total number of bales ginned within Comanche County to date slightly exceeds 10,000.

WOODWARD:

The month of December was mild, with a short period of minimum temperatures ranging between 12° and 15°, but for most of the month between 25° and 35°. There were a few days when wind averaged over 10 miles per hour. There were several days with

a trace of precipitation but only one of consequence. This gave 0.39 inch in this form of snow and sleet, which melted slowly, benefitting the wheat.

People visiting the locality from north and west remark on the good cover of wheat found here. It is well rooted and healthy, but has not covered ground so well that it will prevent severe dust storms, in case high winds occur. If they do not, wheat should carry through nicely until rains may be expected, as it is making little demand on moisture.

During December grain sorghums were harvested and threshed, hay was stacked, and sorghum seeds were cleaned. Other station work consisted of pulling dead trees, hauling brush, and building grape trellis. Nursery stock was dug and shipped to cooperators, and a number of trees were planted on the station.

Maximum temperature, 63°; minimum, 6°; precipitation, 0.40 inch.

NORTH PLATTE:

December weather was mild and open except for a few nights of sub-zero temperatures early in the month. Conditions have been ideal for wintering of livestock. Cattle and hogs in all wintering and feeding trials have made above normal gains. An almost unprecedented decline in prices of good quality finished cattle during the month has resulted in heavy losses to feeders on recent shipments. Marketing of experimental lots of cattle from the station illustrates the general condition. Two shipments of equal quality fed steers of which the first lot went to market the last of November and the second lot the third week in December were sold for $16.50 and $11.75 per hundred respectively. Profit on the first lot was 4½ times that on the second lot. The market declined nearly $2.00 more before the month closed.

No high velocity winds occurred during the month, and no bad soil blowing has taken place.

Precipitation for December, 0.29 inch, for the year 1937, on the Substation table 14.02, North Platte Weather Bureau 12.37; for the two years 1936-37, the total rainfall of 23.63 inches is the lowest of any two consecutive years in the 62-year period of record.

Maximum temperature, 58°; minimum, -2°, mean, 28°.

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